

Claims

1. A flame-retardant, halogen-free winding film comprising
at least one polypropylene copolymer,
5 at least one inorganic flame retardant, and
1 to 30 phr, preferably 5 to 15 phr, of at least one polymer which is incompatible
with the polypropylene copolymer.
2. The winding film of claim 1, characterized in that the polymers which are
10 incompatible with the polypropylene contain at least 25% by weight of oxygen.
3. The winding film of claim 1 or 2, characterized in that the solubility parameter σ of
the incompatible polymers is at least $19 \text{ J}^{1/2}/\text{cm}^{3/2}$.
- 15 4. The winding film of at least one of the preceding claims, characterized in that the
incompatible polymer is polyvinyl acetate or is composed of a polyester or a
polyamide.
5. The winding film of at least one of the preceding claims, characterized in that the
20 flame-retardant filler is added at 70 to 200 phr, preferably at 110 to 150 phr, and
in particular is a magnesium hydroxide.
6. The winding film of at least one of the preceding claims, characterized in that the
oxygen index (LOI) of the adhesive-coated winding film is at least 19%, preferably
25 > 21%, more preferably > 23%, and the flame spread rate in accordance with
FMVSS 302 is less than 300 mm/min, preferably < 200 mm/min, and more
preferably < 70.
7. The winding film of at least one of the preceding claims, characterized in that the
30 winding film comprises not only the polypropylene copolymer but also ethylene-
propylene copolymers from the classes of the EPM and EPDM polymers.
8. The winding film of at least one of the preceding claims, characterized in that the
winding film contains at least 5 phr, preferably at least 10 phr, of carbon black, the

carbon black preferably having a pH of 6 to 8.

9. The winding film of at least one of the preceding claims, characterized in that the polypropylene copolymer has a flexural modulus of less than 500 MPa, preferably of 80 or less, and more preferably of 30 MPa or less, and/or with a crystallite melting point in the range from 120°C to 166°C, preferably up to 148°C, more preferably up to 145°C.
10. The winding film of at least one of the preceding claims, characterized in that the thickness of the winding film is 50 to 150 μm , in particular 55 to 100 μm , and the force in machine direction at 1% elongation is 1 to 4 N/cm and/or the force at 100% elongation is 3 to 15 N/cm.
11. The winding film of at least one of the preceding claims, characterized in that the winding film has on one or both sides, especially one side, a self-adhesive layer, which is preferably based on polyisoprene, ethylene-vinyl acetate copolymer and/or polyacrylate, and if desired has a primer layer between film and adhesive layer, the amount of the adhesive layer being in each case 10 to 40 g/m^2 , preferably 18 to 28 g/m^2 , the bond strength to steel being 1.5 to 3 N/cm.
12. The winding film of at least one of the preceding claims, characterized in that the winding film comprises a solvent-free pressure-sensitive adhesive which is produced by coextrusion, melt coating or dispersion coating, preferably a pressure-sensitive dispersion adhesive and in particular one based on polyacrylate, this adhesive being joined to the surface of the carrier film by means of flame or corona pretreatment or of an adhesion promoter layer which is applied by coextrusion or coating.
13. The winding film of at least one of the preceding claims, characterized in that the winding film is plasticizer-free or the plasticizer content is so low that the fogging number is above 90%.
14. Use of a winding film of at least one of the preceding claims for bundling, protecting, labeling, insulating or sealing ventilation pipes or wires or cables and

for sheathing cable harnesses in vehicles or field coils for picture tubes.